REMARKS

Summary of the Office Action

Claims 1-2 and 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

Robinson (U.S. Patent No. 7,072,846) (hereinafter "Robinson") in view of Jacobi et al. (U.S.

Pre-Grant Publication No. 2006/0195362) (hereinafter "Jacobi").

Claims 3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

Robinson in view of Jacobi and further in view of Seto et al. (U.S. Publication No.

2002/0041692) (hereinafter "Seto").

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in

view of Jacobi and in view of Ward et al. (U.S. Patent No. 6,526,411) (hereinafter "Ward").

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in

view of Jacobi and further in view of Cluts (U.S. Patent No. 5,616,876) (hereinafter "Cluts").

Claims 9-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

Robinson in view of Jacobi and further in view of Foote et al. (U.S. Publication No.

2003/0205124) (hereinafter "Foote").

Summary of the Response to the Office Action

In accordance with an approach detailed in telephone discussions with Examiner Charles

Adams and with Primary Examiner Cam Truong, which discussions will be summarized the

following remarks, Applicants have amended each of independent claims 1, 7 and 8, and added

new dependent claims 12-14 to differently describe embodiments of the disclosure of the instant

application's specification and/or to improve the form of the claims. Accordingly, claims 1-14 are currently pending for consideration.

Rejections under 35 U.S.C. § 103(a) and Statement of Substance of Examiner Interviews

Claims 1-2 and 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in view of Jacobi. Claims 3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in view of Jacobi and further in view of Seto. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in view of Jacobi and further in view of Ward. Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in view of Jacobi and further in view of Cluts. Claims 9-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson in view of Jacobi and further in view of Foote.

Examiner Charles Adams and Primary Examiner Cam Truong are thanked for the courtesies extended to Applicants' undersigned representative in a telephone interview on November 20, 2007. Applicants' undersigned representative conducted a follow-up interview with Examiner Charles Adams regarding proposed claim amendments in telephone discussions on December 5 and 6, 2007.

During the November 20, 2007 interview, Applicants' undersigned representative explained detailed arguments from a proposed agenda that had been previously sent to Examiner Adams by facsimile on November 14, 2007 in response to the Examiner's request in that regard. The content of this proposed agenda will now be discussed.

Proposed Agenda Sent to Examiner Adams by Facsimile on November 14, 2007

Independent claims 1, 7 and 8 have been rejected under 35 U.S.C. § 103(a) as being

unpatentable over Robinson (U.S. Patent No. 7,072,846) (hereinafter "Robinson") in view of

Jacobi et al. (U.S. Patent Publication No. 2006/0195362) (hereinafter "Jacobi"). This

combination rejection has been reapplied in the latest Non Final Office Action dated August 22,

2007 despite detailed arguments filed on April 27, 2007 and May 29, 2007 in this application.

As a result, the Applicants have closely studied the applied Robinson and Jacobi references and

have found some significant differences between the independent claims 1, 7 and 8 of this

application and the disclosure of the applied references. As a result, Applicants' representative

contacted Examiner Adams by telephone and requested the opportunity to discuss these

differences in order to give Applicants a better idea of how they should next proceed in an effort

to advance the prosecution of this application. Examiner Adams requested that the following

agenda be provided to him before the substance of these differences could be discussed in order

to allow the Examiner to prepare for the discussion.

Disclosure of this Application

The proposed agenda then went on to explain how the disclosure of the instant

application relates, for example, to a novel device and associated method to search for a piece of

music from a music database in order to find particular music to which a user desires to listen.

Fig. 2 of the instant application shows the configuration of an operation panel of an operation

unit of the music searching device of a first embodiment of the invention, for example. In the

arrangement of this disclosed embodiment, a user sets "representative music" which serves as a

basis for the music search. A musical characteristic of the representative music is compared

musical characteristics of a plurality of pieces of music stored in a music database, for example, as search targets. This comparison is used to calculate degrees of similarities between the representative music and the pieces of music stored as search targets. As a result, search targets can be selected in descending order based on a degree of similarity with the representative music. These selected search targets can then be stored as a "candidate music list" and can also be listed in this descending order in the title display area 24.

The disclosure then goes on to explain that the user might decide to sort this "candidate music list" in one way or another. For example, a user might press one of the "played frequency" buttons 28 (in Fig. 2) to sort the "candidate music list" by pieces of music having a "high" frequency or alternatively to sort the "candidate music list" by pieces of music having a "low" frequency. However, the specification, at page 16, line 20 – page 19, line 2, for example, explains, in connection with Figs. 8A and 8B, for example, that certain advantages can be gained by not only sorting the "candidate music list" based on high or low played frequencies but instead by a very particular "stimulation coefficient" of each of the pieces of selected music which is calculated by the following equation:

$$\text{stimulation coefficient} = \frac{\text{similarities of the pieces of selected music (degree of similarity)}}{\text{played frequencies of the pieces of selected music (played frequency)}}$$

Each of independent claims 1, 7 and 8 of this application describe this feature in particular detail.

Distinctions Between Applied References and the Independent Claims

The proposed agenda then went to explain that Applicants have closely studied the applied <u>Robinson</u> and <u>Jacobi</u> references and they have concluded that these references, whether taken separately or combined, fail to disclose "stimulation coefficients calculated by dividing the similarities of the pieces of selected music by the played frequencies of the pieces of selected music." Applicants will now set forth their position in this regard in detail.

At page 3 of the Office Action dated August 22, 2007, the Examiner points out that this feature is taught by the following disclosure. The Examiner notes that:

1. "<u>Robinson</u> teaches using played frequencies as a variable to determine popularity;" and

2. <u>Jacobi</u> "teaches dividing a degree of similarity between two items by a variable indicating popularity (number of times purchased, paragraphs [0082]-[0084])."

Applicants respectfully disagree with these characterizations of <u>Robinson</u> and <u>Jacobi</u>. Applicants have concluded that <u>Jacobi</u> does not disclose (1) any degree of similarity between two items and <u>Jacobi</u> also does not disclose (2) any variable indicating popularity (number of times purchased). These points (1) and (2) will be discussed in particular detail as follows.

Regarding Point (1), Applicants noted in the Proposed Agenda that:

<u>Jacobi</u> discloses a commonality index (CI) which is calculated as the following equation:

$$CI\ (Item\_A, Item\_B) = \frac{N_{common}}{\sqrt{N_A \times N_B}}$$

N_A :the number of customers who bought item A
N_B :the number of customers who bought item B
N_{common} :the number of customers who bought both item A and item B

According to the Advisory Action dated May 15, 2007 and the Office Action dated August 22, 2007, the Examiner has noted his position that N_{common} disclosed in <u>Jacobi</u>'s above-reproduced CI equation corresponds to the degree of similarity described in the claims of the instant application. Applicants disagree. Applicants believe that N_{common} merely represents the number of customers who purchased both item A and item B. However, N_{common} does not represent any degree of similarity between item A and item B. Applicants position in this regard can be understood by the following example.

Applicants respectfully submit that N_{common} cannot correspond to a degree of similarity as claimed in independent claims 1, 7 and 8 of this application. Applicants set forth an example regarding a certain shop that sells both item A and item B. In the morning on a certain day, 50 people buy both items A and B. If the Examiner's assertion was correct, then N_{common} (or the degree of similarity as asserted by the Examiner) would become 50. In the afternoon, if 40 people buy both items A and item B from the shop, then N_{common} (or the degree of similarity as asserted by the Examiner) of items A and B would increase to 90.

However, despite the change from an N_{common} value of 50 to 90, Applicants respectfully submit that the similarity between item A and item B clearly has not changed because the items are still the same. Thus, their degree of similarity has not changed. Therefore, Applicants respectfully submit that it is clear that N_{common} can not be interpreted as corresponding to a degree of similarity.

<u>Regarding Point (2), Applicants noted in the Proposed Agenda that</u>

1. Applicants conclude that $\sqrt{N_A \times N_B}$, as disclosed in <u>Jacobi</u>'s above-reproduced CI equation, does not relate to a variable indicating popularity (the number of times purchased) as asserted by the Examiner for the following reasons.

2. N_A apparently represents "the number of customers who bought <u>at least</u> item A" not "the number of customer who bought <u>only</u> item A."

3. If N_A would represent the latter, the value of CI becomes infinite when the number of customers of item A is 0 since the denominator becomes 0.

4. $N_A = N_{A0} + N_{common}$ when N_{A0} represents the number of customers who bought <u>only</u> item A (this also applies to item B).

5. The number of purchased items becomes $N_A + N_{A0} + N_{common}$. Thus, if $\sqrt{N_A \times N_B}$ corresponds to the number of times purchased, the following equation is satisfied.

$$N_{A0} + N_{B0} + N_{common} = \sqrt{N_A \times N_B} \quad \cdots \text{(A)}$$

6. By squaring both sides of equation (A), the following is obtained.

Left side: $N_{A0}^2 + N_{B0}^2 + N_{common}^2 + 2 N_{A0} \cdot N_{B0} + 2 N_{A0} \cdot N_{common} + 2N_{B0} \cdot N_{common}$

Right side: $N_{A0} \cdot N_{B0} + N_{A0} \cdot N_{common} + N_{common} \cdot N_{B0} + N_{common}^2$

Then,
$N_{A0}^2 + N_{B0}^2 + N_{A0} \cdot N_{B0} + N_{A0} \cdot N_{common} + N_{B0} \cdot N_{common} = 0$ is satisfied.

However, Applicants respectfully submit that the left side never becomes 0, as a result, contrariety with this assertion occurs.

Thus, Applicants respectfully submitted in the Proposed Agenda that $\sqrt{N_A \times N_B}$ cannot be interpreted as corresponding to the number of items purchased.

Summary of November 20, 2007 Examiner Interview

A discussion of technical points from the above-discussed Proposed Agenda was conducted between Applicants' undersigned representative, Examiner Charles Adams and Primary Examiner Cam Truong on November 20, 2007. During this telephone interview, the Examiners appeared to understand the distinctions between the numerator and denominator of the commonality index (CI) disclosed in Jacobi and the numerator and denominator of the stimulation coefficient ratio described in the independent claims of the instant application.

Particularly, the Examiners agreed that there is a difference between the "degree of similarity" concept in the instant application's claims and the N_{common} value in the numerator of Jacobi's CI ratio. However, the Examiners noted that the claims do not specifically describe what is meant by the "degree of similarity." As a result, they noted that they are interpreting this feature broadly and they believe that as N_{common} represents "the number of customers who bought both items A and B," then this could be understood to be a "degree of similarity" at least to some extent. Alternatively, Primary Examiner Cam Truong noted that the applied rejection is not under 35 U.S.C. § 102, but instead is under 35 U.S.C. § 103 and one having ordinary skill in the art would be able to obtain the ratio described in the current form of independent claims 1, 7 and 8 of this application based on the CI ratio of Jacobi as rejected in the Office Action.

Applicants' undersigned representative, being surprised that the Examiners made such assertions in light of the above-discussed significant differences between the subject matter of the instant application and that of the applied references, responded by explaining in particular detail why N_{common} of Jacobi does not correspond to a degree of similarity to any extent, as explained in the above-discussed Proposed Agenda sent by facsimile to the Examiners on

November 14, 2007. Applicants' undersigned representative went on to explain that if item A of Jacobi was, for example, a compact disc and item B of Jacobi was, for example, a pad of paper, the similarity of these objects (a compact disc and a pad of paper) would not change based on how many of such items A and B were purchased by common individuals. Applicants' undersigned representative also explained how Applicants have additionally explained in detail, in the facsimile sent to the Examiners on November 14, 2007, how the denominator of Jacobi's CI ratio does not correspond to a variable indicating popularity.

As a result, the Examiners agreed that a minor amendment to each of independent claims 1, 7 and 8 would possibly overcome the rejections based on the currently applied references. The Examiners pointed to page 11, line 20 – page 12, line 5 of the instant application's specification and indicated that teachings along any of these lines, for example, could be added to each of independent claims 1, 7 and 8 to more specifically describe the "degree of similarity" feature in the claims of this application.

Accordingly, while Applicants do not necessarily concede that an amendment to the claims is necessary, for reasons expressed in detail during the telephone interview, and as summarized in the foregoing discussion, in an effort to advance the prosecution of this application, Applicants opted to amend each of independent claims 1, 7 and 8 to more particularly describe the "degree of similarity" as per, for example, the disclosure at page 11, line 20 – page 12, line 5 of the instant application's specification. In addition, new dependent claims even further describing this feature are proposed.

Summary of December 5-6 Examiner Interview

In accordance with the discussion in the November 20, 2007 Examiner Interview,

Applicants' undersigned representative forwarded Applicants' proposed claim amendments to

each of independent claims 1, 7 and 8, as well as Applicants' new proposed claims 12-14, to

Examiner Charles Adams on December 5, 2007. After consultation with Primary Examiner Cam

Truong, Examiner Adams conducted a further telephone discussion with Applicants'

undersigned representative on December 6, 2007 to inform Applicants that the Examiners had

concluded that their proposed amendments to independent claims 1, 7 and 8, as forwarded to

Examiner Adams on December 5, 2007, would overcome the applied art of record.

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Accordingly, Applicants are proceeding with those amendments to each of independent

claims 1, 7 and 8 in the instant Amendment paper. In addition, new dependent claims 12-14 are

also submitted in this paper as previously proposed to the Examiner on December 5, 2007.

As a result, for at least the foregoing reasons, Applicants respectfully submit that neither

of Robinson and Jacobi, whether taken singly or combined, teach or suggest the combinations of

features described in newly-amended independent claims 1, 7 and 8, respectively, of the instant

application.

Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a)

should be withdrawn because neither of Robinson and Jacobi, whether taken singly or combined,

teach or suggest each feature of independent claim 1, 7 or 8. MPEP § 2143.03 instructs that "[t]o

establish prima facie obviousness of a claimed invention, all the claim limitations must be taught

or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

Furthermore, Applicants respectfully assert that dependent claims 2-6 and 9 are allowable at least because of their dependence from claim 1 and the reasons set forth above. Also, dependent claims 10 and 11 are allowable at least because of their dependent from claims 7 or 8, and the reasons set forth above. The additionally applied reference to Seto, with regard to dependent claims 3 and 5, fails the cure the deficiencies of Robinson and Jacobi, as discussed above. The additionally applied reference to Ward, with regard to dependent claim 4, fails the cure the deficiencies of Robinson and Jacobi, as discussed above. The additionally applied reference to Cluts, with regard to dependent claim 6, fails the cure the deficiencies of Robinson and Jacobi, as discussed above. Also, the additionally applied reference to Foote, with regard to dependent claims 9-11, fails to cure the deficiencies of Robinson and Jacobi, as discussed above.

Also, Applicants have now presented new dependent claims 12-14 in order to further describe "degrees of similarity" as discussed previously. Applicants respectfully submit that these newly-presented dependent claims are allowable at least because of their dependence on newly-amended independent claim 1, 7 or 8, and the reasons discussed previously.

During the November 20, 2007 Examiner Interview, Primary Examiner Cam Truong commented that, upon filing claim amendments overcoming the currently-applied references, a further search would be conducted in the usual course. Examiner Truong went on to note that, in the event that such a further search does not result in relevant art being found, then Examiner Truong would be prepared to approve the allowance of this application.

CONCLUSION

In view of the foregoing amendments and remarks, withdrawal of the rejections and allowance of all pending claims are earnestly solicited. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: December 11, 2007   By:

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